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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/850,203 | 05/08/2001 | Yuji Saito | 101213-00009 | 9728 |

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EXAMINER

DOVE, TRACY MAE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1745

DATE MAILED: 07/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/850,203

Applicant(s)

SAITO ET AL.

Examiner

Tracy Dove

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 6-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged.

Election/Restrictions

Applicant's election without traverse of Group I, claims 1-5, in Paper No. 6 is acknowledged.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Specification

The disclosure is objected to because of the following informalities: on page 6, line 1 the specification recites "with reference to Figures 4(a) to 4(l)". However, it appears the specification should recite "with reference to Figures 4(a) to 4(i)".

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The disclosure is objected to because of the following informalities: on page 7, lines 8-9 the specification recites “the gel 20 may comprise 20% polybenzimidazole (PBI) and 80% solvent such as dimethylacetamide (DMAC) as disclosed in United States Patent No. 5,535,436”. However, the recited patent does not teach a gel comprising polybenzimidazole and dimethylacetamide. The patent is entitled “Portable Transceiver and ESN Transfer System Therefor” (front page of patent is attached to this Action).

The disclosure is objected to because of the following informalities: on page 9, lines 10-11 the specification recites “four parallel passages 28 to 29 extending in the axial direction, and the upper end of the casing 31 is closed”. However, it appears the specification should recite “four parallel passages 28 to 31 extending in the axial direction, and the upper end of the casing 1 is closed”. Note page 9, line 22 which recites “the closed end of the casing 1”.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Herceg, US

4,666,798.

Herceg teaches a tubular (shown in the figures) fuel cell comprising a plurality of honeycomb sections each consisting essentially of thin layers of cathode material and anode material respectively sandwiching a thin layer of electrolyte material (electrodes interposing electrolyte layer) constructed to define a plurality of parallel fuel and oxidant passageways of substantially uniform transverse cross-section wherein the inside faces thereof are only the anode material or only the cathode material establishing serial flow connections between the respective anodes of adjacent fuel cell segments and the respective cathodes of adjacent fuel cell segments (claim 14, Figure 3). Thus, the adjacent segments (stacked plurality of layers) form the gas flow passageways. Each fuel cell segment is square in transverse cross section and is constructed of four anode walls 38 and four cathode walls 39 on opposite sides of a thin electrolyte 40. The fuel passageways 36 and oxidant passageways 37 are defined respectively by four interconnecting planar anode walls 38 and four interconnecting planar cathode walls (Figure 3; col. 7, line 66-col. 8, line 3; and, col. 3, lines 27-30). Herceg teaches an improved construction of serially connected fuel cells each having a honeycomb core comprised of many small individual monolithically formed cells or passageways through which the fuel and the oxidant are passed for the electrochemical reaction (col. 3, lines 54-59).

Regarding claim 2, Figure 3 is taken along lines 3-3 of Figure 2. Thus, in order to form the parallel gas flow passages 36,37 the fuel cell segments must be stacked in the axial direction of the casing. See also Figure 1 wherein the fuel cell segment is represented by reference numeral 26.

Regarding claims 3 and 4, the manifold material 45, 46 may be the same as the electrolyte material 40 (col. 8, line 61-col. 9, line 5). See also Figures 1 & 7. In Figure 2

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reference numeral 31 indicates the end wall of the fuel cell array which is the electrolyte layer.

Thus the casing is formed when the fuel cell segments are stacked adjacent to each other.

Regarding claim 5, Figure 3 illustrates gas passages 36,37 are defined by separating an interior of the tubular fuel cell with the electrolyte 40 and gas diffusion layers 38,39.

Thus the claims are anticipated.

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Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Primdahl, US 5,085,950.

Primdahl teaches a fuel cell comprising an electrolyte membrane 30 sandwiched between an anode sheet 20 and a cathode sheet 40 (pair a gas diffusion electrodes interposing an electrolyte layer). Figure 4 depicts a tubular fuel cell. The electrolyte membrane, anode sheet and cathode sheet define a fuel gas passage 20i and an oxidizing gas passage 40i. See Figure 3; col. 3, lines 15-30; and, col. 3, line 53-col. 4, line 3. The electrode active layers 20a, 40a may be composed of several sub-layers (plurality of layers), wherein one sub-layer has large pores which facilitates the gas transport through the active layer (gas diffusion) (col. 2, lines 27-31).

Thus the claim is anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-5 are rejected under 35 U.S.C. 102(e)/103(a) as being anticipated by, and alternatively unpatentable over, Lawless, US 6,372,375.

Lawless teaches a honeycomb ceramic fuel cell (tubular) comprising an oxidant supply passage, a cathode electrode disposed in the oxidant supply passage, a fuel supply passage, an anode electrode disposed in the fuel supply passage, and a stabilized bismuth oxide oxygen ion conductive ceramic (electrolyte) interposed between the cathode electrode and the anode electrode (see abstract). Solid electrolyte fuel cells include a solid electrolyte that is oxygen-ion conductive. A porous cathode electrode and a porous anode electrode are formed on opposite sides of the electrolyte (electrodes interposing electrolyte). See col. 1, lines 20-23.

Regarding claim 4, the ceramic fuel cell comprises an extruded multi-cellular ceramic structure, which is also referred to as a honeycomb ceramic body 20 (electrolyte) (col. 4, lines 26-32).

Regarding claim 5, the oxygen ion conductive ceramic may be arranged to define a plurality of oxidant supply passages and a plurality of fuel supply passages. The oxidant supply passages may be oriented substantially parallel to the fuel supply passages and selected ones of the oxidant supply passages are preferably defined so as to be adjacent to corresponding ones of the fuel supply passages. More specifically, the oxygen ion conductive ceramic may be arranged to define a plurality of substantially parallel longitudinal channels and selected ones of the longitudinal channels may define the oxidant supply passages and remaining ones of the longitudinal channels define the fuel supply passages (col. 2, lines 49-60). The cathode electrode is disposed in the oxidant supply passages and the anode electrode is disposed in the fuel supply passages (col. 2, lines 8-15).

Thus the claims are anticipated.

The claims are alternatively unpatentable. Lawless does not teach the gas diffusion electrodes and/or tubular fuel cell are formed by stacking a plurality of layers of material therefor (claims 1-3). However, the courts have ruled that product-by-process limitations, in the absence of unexpected results, are obvious. Therefore, whether the electrodes and/or tubular fuel cell are formed by stacking a plurality of layers of material therefor or by forming as a single layer (i.e., extrusion), the electrodes and/or tubular fuel cell, as an end result, appear to be identical. In re Fessman, 489 F2d 742; 180 USPQ 324 (CCPA 1974). In re Marosi, 218 USPQ 289 (Fed. Cir. 1983). The burden is upon the applicant to come forward with evidence establishing an unobvious difference between the fuel cell of the instant invention and the fuel cell of Lawless.

Note the silver overlay and zirconia coating layers disclosed by Lawless are not part of the gas diffusion electrodes, but are interposed between the electrolyte and respective electrode (see abstract).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kawasaki et al. EP0 809 313 teaches a solid oxide fuel cell comprising at least one dense solid electrolyte body, at least two dense interconnectors, cathodes and anodes. The interconnectors are interposed between the cathode and anode. See abstract.

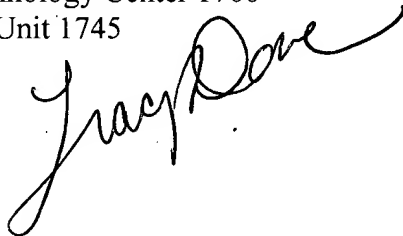
Badding et al. US6,551,735 teaches a honeycomb electrode fuel cell.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached Monday-Thursday (9:00 AM-7:30 PM). My supervisor is Pat Ryan, who can be reached at (703) 308-2383. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax numbers are 703-872-9310 (after non-final) and 703-872-9311 (after final).

June 30, 2003

Tracy Dove
Patent Examiner
Technology Center 1700
Art Unit 1745

A handwritten signature in cursive script that reads "Tracy Dove". The signature is written in black ink and is positioned below the printed name and title.